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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/639,850	08/16/2000	Toshihiro Endo	0250-814	2448

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EXAMINER

CRENSHAW, MARVIN P

ART UNIT	PAPER NUMBER
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2854

DATE MAILED: 11/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N . 09/639,850	Applicant(s) ENDO ET AL.	
	Examiner Marvin P. Crenshaw	Art Unit 2854	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on the amendment filed 8/21/03 .
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- | | |
|---|--|
| 15) <input type="checkbox"/> Notice of References Cited (PTO-892) | 18) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 16) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 19) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 17) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 20) <input type="checkbox"/> Other: |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2,3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Black et al in view of Mastromatteo (4,111,056).

Black et al. teaches a stencil printer comprising an ink supply pump (Fig. 4) comprising a diaphragm pump (146) having a diaphragm operable between a first position (See col. 5, lines 5-20) preventing fluid flow of an ink and a second position (See, col. 5, lines 5 – 20) permitting fluid flow of the ink therethrough and a drive assembly (142 and 144) for driving said diaphragm between said first and second position. However, Black et al. doesn't teach the stress applied to the diaphragm is less than the elastic limit.

Mastromatteo teaches limiting deformation (See col. 6, lines 9 – 20) of a diaphragm to a stress below the elastic limit is necessary so they will return from a pressure loaded position to the preloaded position to maintain a normal force. It would have been obvious to one of ordinary skill in the art to apply the stress to the diaphragm pump of Black et al. at a level below the elastic limit of the diaphragm as taught by Mastromatteo so that the diaphragm would maintain its desired positions during use. With respect to

the recitation of stress applied to the diaphragm being limited to less than 75% of the elastic limit, since Mastromatteo et al. teaches to apply stress below the elastic limit, the optimum stress required in order to maintain the diaphragm in proper form would be determined by those having ordinary skill in the art through routine experimentations. Such a routine experimentation would have been obvious to those skilled in the art.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Black et al. in view of Mastromatteo (4,111,056) as applied to claims 2,3, and 8 above, and further in view of Miller et al.

Black et al. as modified by Mastromatteo teaches all that is claimed in the above rejection of claims 2,3 and 8, except the pump being composed of fluoro-rubber or natural rubber.

With respect to claim 4, Miller et al. teaches a pump is composed of fluoro-rubber or natural rubber (See col. 1, 55-61). It would have been obvious to one of ordinary skill in the art to provide the stencil printer of Black et al. as modified by Mastromatteo to have a diaphragm pump composed of fluoro-rubber or natural rubber as taught by Miller et al. so that it is durable during use.

Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Black et al. in view of Mastromatteo (4,111,056) as applied to claims 2,3, and 8 above, and further in view of Kawahata et al.

Black et al. as modified by Mastromatteo teaches all that is claimed in the above rejection of claims 2,3 and 8, except for the said ink comprising an ultraviolet ray curing ink.

Kawahata et al. teaches an ink comprised of an ultraviolet ray curing ink. It would have been obvious to one of ordinary skill in the art to provide the stencil printer of Black et al. as modified by Mastromatteo to have an ink comprised of ultraviolet ray curing ink as taught by Kawahata et al. in order to have a faster drying ink after printing.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Black et al. in view of Mastromatteo (4,111,056) and Miller and further in view of applicant's admitted prior art.

Black et al. as modified by Mastromatteo teach a stencil printer (Fig. 7) comprising an ink supply pump in the form of a diaphragm pump (Col. 5, lines 6-11) and wherein the maximum stress applied to the diaphragm during operation of the diaphragm pump does not exceed 75% of the elastic limit of the diaphragm (See col. 6, lines 9 – 20) . However, Black et al. as modified by Mastromatteo doesn't teach the use of a silicone rubber and the swelling ratio of 1.05. Miller et al. teaches a diaphragm pump which is made of silicone rubber (col. 3, lines 57-61). It would be obvious to one of ordinary skill in the art to provide the stencil printer of Miller et al. to have a diaphragm pump made of silicon rubber as taught by Miller et al. because of the elastic properties of silicon rubber is more advantageous in use as a material for a pump to pump liquid. Since the applicant has noted that silicone rubber is known to have a swelling Ratio (see page 8, lines 4-10 and Table 3 of the present specification) to the ink of less than 1.05, it would be inherent that Black et al. as modified by Miller et al. would have the diaphragm pump being made of silicone rubber which possesses the swelling ratio as recited.

Respons to Arguments

Applicant's arguments filed 08/21/2003 have been fully considered but they are not persuasive. Specifically, Mastromatteo meets the claimed language of "limiting deformation of a diaphragm to a stress below the elastic limit necessary so they will return from a pressure loaded position to the preloaded position to maintain a normal force". With respect to the claim language of "having a stress applied to less than 75% of the elastic limit of the diaphragm", this limitation is rendered obvious by Mastromatteo as set forth in the office action. He teaches that you would not want to stress his diaphragm to the elastic limit so it will remain undistorted and resilient. So, by his use of not stressing the diaphragm to the elastic limit it would be obvious that the diaphragm is being used up to percentage in which would be less than the elastic.

With respect to Mastromatteo being misunderstood or mischaracterized, Mastromatteo is used to teach that you would not use a diaphragm past it's elastic limit so it will have a longer life for usage.

With respect to the diaphragm 30 of Mastromatteo not being driven, it is. When the fluid is actuated and the valve is closed there is a force applied to the diaphragm to cause it to be driven.

With respect to the routine experimentation is not sufficient, to one of ordinary skill in the art it would be obvious to obtain a value that the diaphragm to work at it's best optimum level, that testing would have to be done.

With respect to the Miller reference as non-analogous art, he teaches a material (specifically silicon rubber) having a swelling ratio of 1.05. It can be perceived that the material of Miller can be used to modify the pump material of Black.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marvin P. Crenshaw whose telephone number is (703) 308-0797. The examiner can normally be reached on Monday - Friday 7:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Hirshfeld can be reached on (703) 305-6619. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Art Unit: 2854

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to be 'MPC', written in a cursive style.

MPC
November 3, 2003

A handwritten signature in black ink, appearing to be 'Andrew H. Hirshfeld', written in a cursive style.

ANDREW H. HIRSHFELD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800